What is Claimed is:

1. A temperature control system for use in a fiber extrusion process comprising:

a plurality of metering pump assemblies including inlets to receive a plurality of molten polymer streams from a supply source that is connectable to the system; and

a pump block disposed proximate the metering pump assemblies and including a plurality of flow paths extending within the pump block, the flow paths being aligned to receive molten polymer flowing from outlets of the metering pump assemblies and to deliver the molten polymer to a spinneret;

wherein the flow paths are arranged in flow path sets within the pump block, and each flow path set includes at least one flow path and is spaced a selected distance from the other flow path sets within the pump block so as to facilitate independent control of the temperature of a molten polymer flowing through each flow path set.

2. The system of claim 1, wherein each flow path set includes a plurality of flow paths, and each metering pump assembly includes an inlet to receive a molten polymer stream from the supply source and a plurality of outlets to direct molten polymer to the flow paths for a respective flow path set.

3. The system of claim 1, further comprising:

insulation material disposed between the flow path sets within the pump block to selectively control heat transfer between molten polymers flowing through different flow path sets.

4. The system of claim 1, wherein at least one flow path set includes a thermal treatment unit to independently maintain molten polymer flowing through the at least one flow path set within a selected temperature range.

5. The system of claim 1, wherein at least one flow path set includes at least one sensor to measure at least one of the temperature and the pressure of molten polymer flowing through the flow path set.

6. The system of claim 1, wherein the pump block includes a chamber, and the flow paths comprise conduits disposed within the chamber.

7. The system of claim 6, wherein the pump block chamber includes insulation material surrounding the conduits.

8. The system of claim 7, wherein the insulation material comprises glass beads.

9. The system of claim 6, wherein the pump block chamber is partitioned into a plurality of sub-chambers, and the flow path sets are disposed in separate sub-chambers.

10. The system of claim 9, wherein each sub-chamber includes a heat treatment unit to independently maintain molten polymer flowing through each sub-chamber within a selected temperature range.

11. The system of claim 10, wherein the heat treatment unit for at least one sub-chamber comprises an inlet and an outlet to the sub-chamber, and the inlet is securable to a thermal supply source to facilitate delivery of a temperature-controlled thermal fluid into and out of the sub-chamber.

12. The system of claim 6, wherein the pump block chamber is defined between a top plate disposed adjacent the metering pump assemblies, a bottom plate opposing the top plate, and a pair of opposing side plates extending between the top and bottom plates, and the top plate further includes a grooved sections disposed at selected locations between metering pump assemblies.

13. The system of claim 1, wherein the flow paths comprise channels extending through portions of the pump block.

14. The system of claim 13, wherein the pump block is partitioned into a plurality of sub-sections via at least one insulation material, and the flow path sets are disposed in separate sub-chambers.

15. The system of claim 1, further comprising:

a spin pack including the spinneret, wherein the spin pack is aligned to receive molten polymer from the flow paths of the pump block; and

a spin beam disposed adjacent the spin pack, the spin beam including a thermal treatment unit to heat the spin beam and at least first portions of the spin pack to a selected temperature range.

16. The system of claim 15, wherein the pump block is partitioned via an insulation material into a plurality of sub-sections that surround a second portion of the spin pack, and each sub-section includes a flow path set.

17. The system of claim 16, wherein the second portion of the spin pack surrounded by the pump block sub-sections is partitioned into sub-sections via the insulation material.

18. A spunbond fiber extrusion system including the temperature control system of claim 15.

19. The system of claim 1, wherein each metering pump assembly includes a pump chamber and a pump disposed within the pump chamber.

20. The system of claim 19, wherein at least one pump includes a heating element to independently maintain the pump within a selected temperature range.

21. The system of claim 19, wherein at least one pump chamber includes a supply conduit securable to a thermal fluid supply source to direct thermal fluid toward the pump within the pump chamber in order to independently maintain the pump within a selected temperature range.

22. A method of independently controlling the temperatures of molten polymer streams in a fiber extrusion process utilizing a temperature control system including a plurality of

metering pump assemblies in communication with a pump block and a spinneret, the method comprising:

(a) directing a plurality of molten polymer streams from a supply source through the plurality of metering pump assemblies to control the flow rate of the molten polymer streams during the fiber extrusion process;

(b) directing molten polymer from the metering pump assemblies into flow paths of the pump block , wherein the flow paths are arranged in flow path sets within the pump block, and each flow path set includes at least one flow path and is spaced a selected distance from the other flow path sets within the pump block so as to facilitate independent control of the temperature of a molten polymer flowing through each flow path set; and

(c) extruding molten polymer through the spinneret to form fibers.

23. The method of claim 22, wherein at least some of the fibers extruded from the spinneret in step (c) are plural component fibers.

24. The method of claim 22, wherein each flow path set includes a plurality of flow paths and each metering pump assembly includes a plurality of outlets corresponding to the flow paths for a respective flow path set.

25. The method of claim 22, further comprising:

(d) providing insulation material between the flow path sets within the pump block to selectively control heat transfer between molten polymers flowing through different flow path sets.

26. The method of claim 22, further comprising:

(d) independently maintaining the temperature of molten polymer flowing through at least one flow path set within a selected temperature range via a thermal treatment unit coupled with the flow path set.

27. The method of claim 22, further comprising:

(d) monitoring at least one of the temperature and the pressure of molten polymer flowing through at least one flow path set via at least one sensor coupled with the flow path set.

28. The method of claim 22, wherein the pump block includes a chamber, and the flow paths comprise conduits disposed within the chamber.

29. The method of claim 28, further comprising:

(d) providing an insulation material within the pump block chamber surrounding the conduits.

30. The method of claim 29, wherein the insulation comprises glass beads.

31. The method of claim 28, wherein the pump block chamber is partitioned into a plurality of sub-chambers, and the flow path sets are disposed in separate sub-chambers.

32. The method of claim 31, further comprising:

(d) independently maintaining the temperature of molten polymer flowing through each sub-chamber within a selected temperature range via a separate heat treatment unit coupled with each sub-chamber.

33. The method of claim 32, wherein the heat treatment unit for at least one sub-chamber comprises an inlet and an outlet to the sub-chamber, and step (e) includes:

(d.1) securing the inlet to the sub-chamber to a thermal supply source to facilitate delivery of a temperature-controlled thermal fluid into and out of the sub-chamber.

34. The method of claim 28, wherein the pump block chamber is defined between a top plate disposed adjacent the metering pump assemblies, a bottom plate opposing the top plate, and a pair of opposing side plates extending between the top and bottom plates, and the top plate further includes grooved sections disposed at selected locations between metering pump assemblies.

35. The method of claim 22, wherein the flow paths comprise channels extending through portions of the pump block.

36. The method of claim 35, wherein the method further comprises:

(d) partitioning the pump block into a plurality of sub-sections, via an insulation material, such that the flow path sets are disposed in separate sub-chambers.

37. The method of claim 22, wherein the temperature control system further includes a spin pack including the spinneret, the spin pack being disposed adjacent the pump block, and a spin beam disposed adjacent the spin pack, the method further comprising:

(d) directing molten polymer from the flow paths of the pump block to corresponding channels in the spin pack;

(e) directing molten polymer from the spin pack channels to the spinneret; and

(f) heating the spin beam and a least first portions of the spin pack to a selected temperature range.

38. The method of claim 37, further comprising:

(g) partitioning the pump block via an insulation material into a plurality of sub-sections surrounding a second portion of the spin pack, wherein each sub-section includes a flow path set.

39. The method of claim 38, further comprising:

(h) partitioning the second portion of the spin pack into sub-sections via the insulation material.

40. The method of claim 22, wherein each metering pump assembly includes a pump chamber and a pump disposed within the pump chamber, and the method further comprises:

(d) independently maintaining the temperature of at least one pump within a selected temperature range via a heating element.

41. The method of claim 22, wherein each metering pump assembly includes a pump chamber and a pump disposed within the pump chamber, and the method further comprises:

(d) directing a thermal fluid from a thermal fluid supply source toward at least one pump, via a supply conduit, so as to independently maintain the temperature of the pump within a selected temperature range.

42. A temperature control system for use in a fiber extrusion process comprising:

a spin pack including a spinneret to extrude fibers from molten polymer;

a spin beam oriented adjacent the spin pack and including a means to heat the spin beam and at least a portion of the spin pack to a selected temperature range;

a means for independently pumping a plurality of molten polymer streams from a supply source to a spinneret; and

a means for independently controlling the temperature of each molten polymer stream within a selected temperature range prior to delivery to the spinneret.

43. The temperature control system of claim 42, wherein the means for independently controlling the temperature of each molten polymer stream further controls heat transfer between molten polymer streams and the spin beam such that the temperature of each molten polymer stream within the system increases by no more than about 50% of the difference between the spin beam temperature and an inlet temperature of the molten polymer stream.